

CHAPTER

INTERNET ONE

Disputes over Macro Theory and Policy

IN THIS CHAPTER YOU WILL LEARN:

The main difference between classical and Keynesian theories of the causes of macroeconomic instability.

The various current explanations of the causes of macroeconomic instability.

About the debate of whether the economy has self-correcting powers.

About the difference in recommendations of the various schools of thought.

As any academic discipline evolves, it evokes criticism and disagreement. In this chapter we examine some of the major disputes over macro theory and policy. After contrasting classical macroeconomic theories with Keynesian theories, we turn to contemporary disagreements on three inter-related questions: (1) What causes instability in the economy? (2) Is the economy self-correcting? (3) Should government adhere to *rules* or use *discretion* in setting economic policy?

SOME HISTORY: CLASSICAL ECONOMICS AND KEYNES

Classical economics began with Adam Smith in 1776 and dominated economic thinking until the 1930s. It holds that full employment is the norm in a market economy and therefore a laissez-faire (“let it be”) policy by government is best. Then, in the 1930s, John Maynard Keynes asserted that laissez-faire capitalism is subject to recurring recessions that bring widespread unemployment. In the Keynesian view, active government policy is required to stabilize the economy and to prevent valuable resources from standing idle.

Let’s compare these two views through modern aggregate demand and aggregate supply analysis.

The Classical View

In the **classical view**, the aggregate supply curve is vertical and is the sole determinant of the level of real output. The downsloping aggregate demand curve is stable and is the sole determinant of the price level.

CLASSICAL VIEW The macroeconomic generalizations accepted by most economists before the 1930s that led to the conclusion that a capitalistic economy was self-regulating and therefore would usually employ its resources fully.

VERTICAL AGGREGATE SUPPLY CURVE

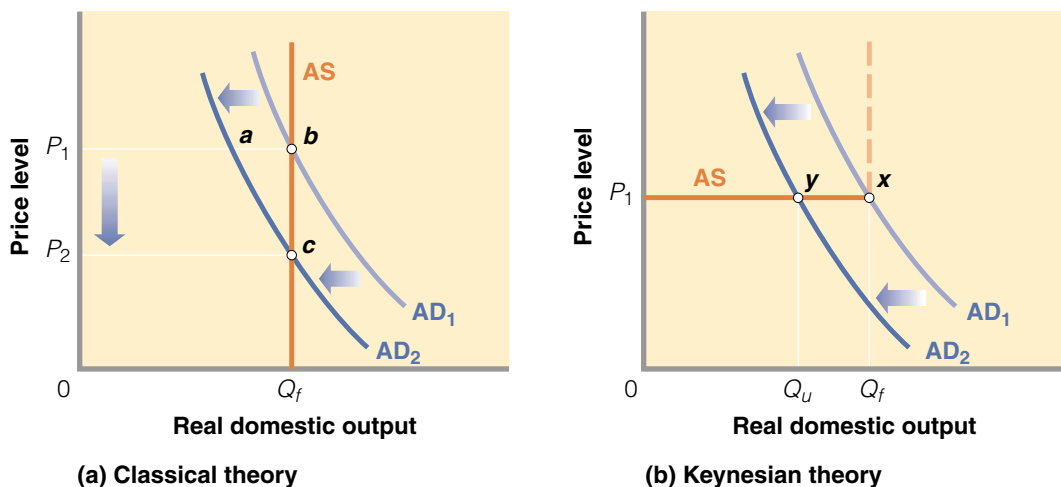
According to the classical perspective, the aggregate supply curve is a vertical line, as shown in Figure IC1-1a. This line is located at the full-employment level of real output, which in this designation is also the full-capacity real GDP. According to the classical economists, the economy will operate at its full-employment level of output, Q_f , because of (1) Say’s law (Chapter 8), and (2) responsive, flexible prices and wages.

We stress that classical economists believed that Q_f does not change in response to changes in the price level. Observe that as the price level falls from P_1 to P_2 in Figure IC1-1a, real output remains anchored at Q_f .

But this stability of output is at odds with the upsloping supply curves for individual products that we discussed in Chapter 3. There we found that lower prices would make production less profitable and would cause producers to offer less output and employ fewer workers. The classical response to this view is that input costs would fall along with product prices, leaving real profits and output unchanged.

Consider a one-firm economy in which the firm’s owner must receive a real profit of \$20 in order to produce the full-employment output of 100 units. You know from Chapter 8 that what ultimately counts is the real reward the owner receives and not the level of prices. Assume that the owner’s only input (aside from entrepreneurial talent) is 10 units of labour hired at \$8 per worker for a total wage cost of \$80 ($= 10 \times \8). Also assume that the 100 units of output sell for \$1 per unit. So total revenue is \$100 ($= 100 \times \1). Now the firm’s nominal profit is \$20 ($= \$100 - \80), and, using the \$1 price to designate the base price index of 100 percent, its real profit is also \$20 ($= \$20 \div 1.00$). Well and good; full employment is achieved. But suppose the price level declines by one-half. Would the owner still earn the \$20 of real profits needed to support production of a 100-unit full-employment output?

The classical answer is “yes.” Once the product price has dropped to 50¢, total revenue will be only \$50 ($= 100 \times 50¢$). But the cost of 10 units of labour will be reduced to \$40 ($= 10 \times \4) because the wage rate will be halved. Although nominal profits fall to \$10 ($= \$50 - \40), real profits remain at \$20. By dividing money profits of \$10 by the new price index (expressed as a decimal), we obtain real profits of \$20 ($= \$10 \div .50$).

FIGURE IC1-1 CLASSICAL AND KEYNESIAN VIEWS OF THE MACROECONOMY

(a) In classical theory, aggregate supply determines the full-employment level of real output, while aggregate demand establishes the price level. Aggregate demand normally is stable, but if it should decline, say, from AD_1 to AD_2 , the price level will quickly fall from P_1 to P_2 to eliminate the temporary excess supply of ab and to restore full employment at c . (b) The Keynesian view is that aggregate demand is unstable and that prices and wages are downwardly inflexible. An AD_1 to AD_2 decline in aggregate demand has no effect on the price level. Instead, the economy moves from point x to y and real output falls to Q_u , where it can remain indefinitely.

With perfectly flexible wages there would be no change in the real rewards and therefore in the production decisions of businesses. A change in the price level will not cause the economy to stray from full employment.

STABLE AGGREGATE DEMAND

Classical economists theorize that money underlies aggregate demand. The amount of real output that can be purchased depends on (1) the quantity of money households and businesses possess and (2) the purchasing power of that money as determined by the price level. The purchasing power of the dollar refers to the real quantity of goods and services a dollar will buy. Thus, as we move down the vertical axis of Figure IC1-1a, the price level is falling. This means that the purchasing power of each dollar is rising. If the price level were to fall by one-half, a certain quantity of money would then purchase a real output twice as large. With a fixed money supply, the price level and real output are inversely related.

What about the location of the aggregate demand curve? According to the classical economists, aggregate demand will be stable as long as the nation's monetary authorities maintain a constant supply of money. With a fixed aggregate supply of output, increases in the supply of money will shift the aggregate demand curve rightward and spark demand-pull inflation. Reductions in the supply of money will shift the curve leftward and trigger deflation. The key to price-level stability, then, is to control the nation's money supply to prevent unwarranted shifts in aggregate demand.

Even if there are declines in the money supply and therefore in aggregate demand, the economy depicted in Figure IC1-1a will not experience unemployment.

Admittedly, the immediate effect of a decline in aggregate demand from AD_1 to AD_2 is an excess supply of output, since the aggregate output of goods and services exceeds aggregate spending by the amount ab . But, with the presumed downward flexibility of product and resource prices, that excess supply will reduce product prices along with workers' wages and the prices of other inputs. As a result, the price level will quickly decline from P_1 to P_2 until the amounts of output demanded and supplied are brought once again into equilibrium, this time at c . While the price level has fallen from P_1 to P_2 , real output remains at the full-employment level.

The Keynesian View

KEYNESIAN VIEW The macroeconomic generalizations that lead to the conclusion that a capitalistic economy is characterized by macroeconomic instability and that fiscal policy and monetary policy can be used to promote full employment, price-level stability, and economic growth.

The heart of the **Keynesian view** is that product prices and wages are downwardly inflexible over very long time periods. The result is graphically represented as a horizontal aggregate supply curve. Also, aggregate demand is subject to periodic changes caused by changes in the determinants of aggregate demand.

HORIZONTAL AGGREGATE SUPPLY CURVE (TO FULL-EMPLOYMENT OUTPUT)

The downward inflexibility of prices and wages presumed by the Keynesians translates to a horizontal aggregate supply curve, as shown in Figure IC1-1b. Here, a decline in real output from Q_f to Q_u will have no impact on the price level. Nor will an increase in real output from Q_u to Q_f . The aggregate supply curve therefore extends from zero real output rightward to point x , where real output is at its full-employment level, Q_f . Once full employment is reached, the aggregate supply curve becomes vertical. The dashed line extending upward from the horizontal aggregate supply curve at x shows this.

UNSTABLE AGGREGATE DEMAND

Keynesian economists view aggregate demand as unstable from one period to the next, even without changes in the money supply. In particular, the investment component of aggregate demand fluctuates, altering the location of the aggregate demand curve. Suppose aggregate demand in Figure IC1-1b declines from AD_1 to AD_2 . The sole impact is on output and employment. Real output falls from Q_f to Q_u but the price level remains unchanged at P_1 . Moreover, Keynesians believe that unless there is an offsetting increase in aggregate demand, real output may remain at Q_u , which is below the full-employment level Q_f . Active government policies to increase aggregate demand are essential to move the economy from point y to point x . Otherwise the economy will suffer the wastes of recession and depression. (*Key Question 1*)

QUICK REVIEW

- In classical macroeconomics, the aggregate supply curve is vertical at the full-employment level of real output and the aggregate demand curve is stable as long as the money supply is constant.
- In Keynesian macroeconomics, the aggregate supply curve is horizontal up to the full-employment level of output; then it becomes vertical. The aggregate demand curve is unstable largely because of the volatility of investment spending; such shifts cause either recession or demand-pull inflation.

WHAT CAUSES MACRO INSTABILITY?

As earlier chapters have indicated, capitalist economies experienced considerable instability during the twentieth century. Canada, for example, experienced the Great Depression, numerous recessions, and periods of inflation. Contemporary economists have different perspectives on why this instability occurs.

Mainstream View

For simplicity, we will use the term “mainstream view” to characterize the prevailing macroeconomic perspective of the majority of economists. According to that view, which retains a Keynesian flavour, instability in the economy arises from two sources: (1) significant changes in investment spending, which change aggregate demand, and, occasionally, (2) adverse aggregate supply shocks, which change aggregate supply. Although these factors are not new to you, let’s quickly review them.

CHANGES IN INVESTMENT SPENDING

Mainstream macroeconomics focuses on aggregate spending and its components. Recall that the basic equation underlying aggregate expenditures is

$$C_a + I_g + X_n + G = \text{GDP}$$

That is, the aggregate amount of after-tax consumption, gross investment, net exports, and government spending determines the total amount of the goods and services produced and sold. In equilibrium, $C_a + I_g + X_n + G$ (aggregate expenditures) is equal to GDP (real output). A decrease in the price level increases equilibrium GDP and thus allows us to trace out a downsloping aggregate demand curve for the economy. Any change in one of the spending components in the aggregate expenditures equation shifts the aggregate demand curve. This, in turn, changes equilibrium real output, the price level, or both.

Investment spending, in particular, is subject to wide “booms” and “busts.” Significant increases in investment spending get multiplied into even greater increases in aggregate demand and thus can produce demand-pull inflation. In contrast, significant declines in investment spending get multiplied into even greater decreases in aggregate demand and thus can cause recessions.

ADVERSE AGGREGATE SUPPLY SHOCKS

In the mainstream view, the second source of macroeconomic instability arises on the supply side. Occasionally, such external events as wars or an artificial supply restriction of a key resource can boost resources prices and significantly raise per-unit production costs. The result is a sizable decline in a nation’s aggregate supply, which destabilizes the economy by simultaneously causing cost-push inflation and recession.

MONETARISM

The macroeconomic view that the main cause of changes in aggregate output and the price level are fluctuations in the money supply; advocates of a monetary rule.

Monetarist View

Classical economics has emerged in several modern forms. One is **monetarism**, which (1) focuses on the money supply, (2) holds that markets are highly competitive, and (3) says that a competitive market system gives the economy a high degree of macroeconomic stability. Like classical economists, monetarists argue that the price and wage flexibility provided by competitive markets would cause fluctuations in

aggregate demand to alter product and resource prices rather than output and employment. Thus the market system would provide substantial macroeconomic stability *were it not for government interference in the economy*.

The problem, as monetarists see it, is that government has promoted downward wage inflexibility through the minimum-wage law, pro-union legislation, guaranteed prices for certain farm products, pro-business monopoly legislation, and so forth. The free-market system is capable of providing macroeconomic stability, but, despite good intentions, government interference has undermined that capability. Moreover, monetarists say that government has contributed to the economy's business cycles through its clumsy and mistaken attempts to achieve greater stability through its monetary policies.

EQUATION OF EXCHANGE

The fundamental equation of monetarism is the **equation of exchange**:

$$MV = PQ$$

where M is the supply of money; V is the **velocity** of money, that is, *the average number of times per year a dollar is spent on final goods and services*; P is the price level, or, more specifically, the average price at which each unit of physical output is sold; and Q is the physical volume of all goods and services produced.

The left side of the equation of exchanges, MV , represents the total amount spent by purchasers of output, while the right side, PQ , represents the total amount received by sellers of that output. The nation's money supply (M) multiplied by the number of times it is spent each year (V) must equal the nation's nominal GDP ($= P \times Q$). The dollar value of total spending has to equal the dollar value of total output.

STABLE VELOCITY

Monetarists say that velocity, V , in the equation of exchange is stable. To them, "stable" is not synonymous with "constant," however, Monetarists are aware that velocity is higher today than it was several decades ago. Shorter pay periods, widespread use of credit cards, and faster means of making payments enable people to hold less money and to turn it over more rapidly than was possible in earlier times. These factors have enabled people to reduce their holdings of cash and chequebook money relative to the size of the nation's nominal GDP.

When monetarists say that velocity is stable they mean that the factors altering velocity change gradually and predictably, and that changes in velocity from one year to the next can be readily anticipated. Moreover, they hold that velocity does not change in response to changes in the money supply itself. Instead, people have a stable desire to hold money relative to holding other financial assets, holding real assets, and buying current output. The factors that determine the amount of money the public wants to hold depend mainly on the level of nominal GDP.

Example: Assume that when the level of nominal GDP is \$400 billion, the public desires \$100 billion of money to purchase that output. That means that V is 4 ($= \$400$ billion of nominal GDP / \$100 billion of money). If we further assume that the actual supply of money is \$100 billion, the economy is in equilibrium with respect to money; the actual amount of money supplied equals the amount the public wants to hold.

If velocity is stable, the equation of exchange suggests that there is a predictable relationship between the money supply and nominal GDP ($= PQ$). An increase in the

EQUATION OF EXCHANGE $MV = PQ$, in which M is the supply of money, V is the velocity of money, P is the price level, and Q is the physical volume of final goods and services produced.

VELOCITY The average number of times per year a dollar is spent on final goods and services.

money supply of, say, \$10 billion would upset equilibrium in our example, since the public would find itself holding more money or liquidity than it wants. That is, the actual amount of money held (\$110 billion) would exceed the amount of holdings desired (\$100 billion). In that case, the reaction of the public (households and businesses) is to restore its desired balance of money relative to other items, such as stocks and bonds, factories and equipment, houses and automobiles, and clothing and toys. But the spending of money by individual households and businesses would leave more cash in the chequable deposits or wallets of other households and firms. And they too would try to “spend down” their excess cash balances. But, overall, the \$110 billion supply of money cannot be spent down because a dollar spent is a dollar received.

Instead, the collective attempt to reduce cash balances increases aggregate demand, thereby boosting nominal GDP. Because velocity in our example is 4—that is, the dollar is spent on average four times per year—nominal GDP rises from \$400 billion to \$440 billion. At that higher nominal GDP, the money supply of \$110 billion equals the amount of money desired ($\$440 \text{ billion} / 4 = \110 billion), and equilibrium is re-established.

The \$10 billion increase in the money supply thus eventually increases nominal GDP by \$40 billion. Spending on goods, services, and assets expands until nominal GDP has gone up enough to restore the original 4-to-1-equilibrium relationship between nominal GDP and the money supply.

Note that the relationship GDP/M defines V . A stable relationship between nominal GDP and M means a stable V . And a change in M causes a proportionate change in nominal GDP. Thus, changes in the money supply allegedly have a predictable effect on nominal GDP ($= P \times Q$). An increase in M increases P or Q , or some combination of both; a decrease in M reduces P or Q , or some combination of both. (*Key Question 4*)

MONETARY CAUSES OF INSTABILITY

Monetarists say that inappropriate monetary policy is the single most important cause of macroeconomic instability. An increase in the money supply directly increases aggregate demand. Under conditions of full employment, that increase in aggregate demand raises the price level. For a time, higher prices cause firms to increase their real output, and the rate of unemployment falls below its natural rate. But once nominal wages rise to reflect the higher prices and thus to restore real wages, real output moves back to its full-employment level and the unemployment rate returns to its natural rate. The inappropriate increase in the money supply leads to inflation, together with instability of real output and employment.

Conversely, a decrease in the money supply reduces aggregate demand. Real output temporarily falls, and the unemployment rate rises above its natural rate. Eventually, nominal wages fall and real output returns to its full-employment level. The inappropriate decline in the money supply leads to deflation, together with instability of real GDP and employment.

The contrast between mainstream macroeconomics and monetarism on the causes of instability thus comes into sharp focus. Mainstream economists view the instability of investment as the main cause of the economy’s instability. They see monetary policy as a stabilizing factor. Changes in the money supply raise or lower interest rates as needed, smooth out swings in investment, and thus reduce macroeconomic instability. In contrast, monetarists view changes in the money supply as the main cause of instability in the economy. For example, they say that the Great

Depression occurred largely because the central bank allowed the money supply to fall by nearly 40 percent during that period. According to Milton Friedman, a prominent monetarist, the case of the United States was typical:

And [the money supply] fell not because there were no willing borrowers—not because the horse would not drink. It fell because the Federal Reserve System forced or permitted a sharp reduction in the [money supply], because it failed to exercise the responsibilities assigned to it in the Federal Reserve Act to provide liquidity to the banking system. The Great Contraction is tragic testimony to the power of monetary policy—not, as Keynes and so many of his contemporaries believed, evidence of its impotence.¹

Real-Business-Cycle View

A third modern view of the cause of macroeconomic instability is that business cycles are caused by real factors that affect aggregate supply rather than by monetary, or spending, factors that cause fluctuations in aggregate demand. In the **real-business-cycle theory**, business fluctuations result from significant changes in technology and resource availability. Those changes affect productivity and thus the long-run growth trend of aggregate supply.

REAL-BUSINESS-CYCLE THEORY

The theory that business cycles result from changes in technology and resource availability, which affect productivity and thus increase or decrease long-run aggregate supply.

An example focusing on recession will clarify this thinking. Suppose productivity (output per worker) declines sharply because of a large increase in oil prices, which makes it prohibitively expensive to operate certain types of machinery. That decline in productivity implies a reduction in the economy's ability to produce real output. The result would be a decrease in the economy's long-run aggregate supply curve, as represented by the leftward shift from AS_{LR1} to AS_{LR2} in Figure IC1-2.

As real output falls from Q_1 to Q_2 , the public needs less money to buy the reduced volume of goods and services. So the demand for money falls. Moreover, the slowdown in business activity means that businesses need to borrow less from banks, reducing the part of the money supply created by banks through their lending. Thus, the supply of money also falls. In this controversial scenario, changes in the supply of money respond to changes in the demand for money. The decline in the money supply then reduces aggregate demand, as from AD_1 to AD_2 in Figure IC1-2. The outcome is a decline in real output from Q_1 to Q_2 , with no change in the price level.

Conversely, a large increase in aggregate supply (not shown) caused by, say, major innovations in the production process would shift the long-run aggregate supply curve rightward. Real output would increase, and money demand and money supply would both increase. Aggregate demand would shift rightward by an amount equal to the rightward shift of long-run aggregate supply. Real output would increase, without driving up the price level.

Conclusion: In the real-business-cycle theory, macro instability arises on the aggregate supply side of the economy, not on the aggregate demand side, as mainstream economists and monetarists usually claim.

Coordination Failures

A fourth and final modern view of macroeconomic instability relates to so-called **coordination failures**. Such failures occur when people fail to reach a mutually beneficial equilibrium because they lack a way to coordinate their actions.

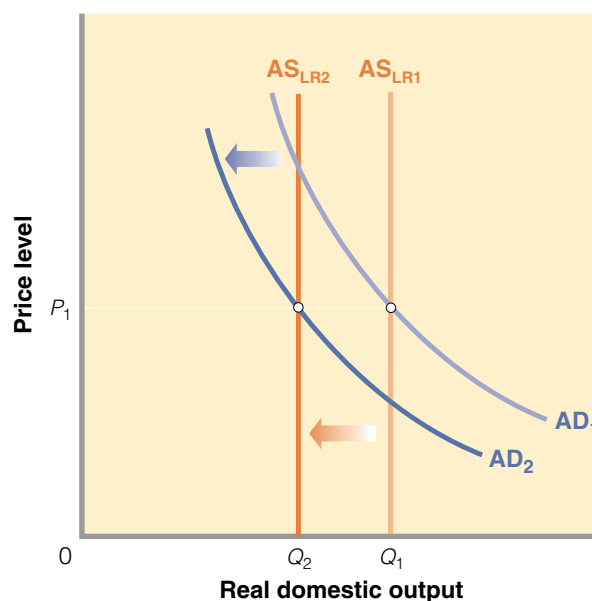
COORDINATION FAILURE

A situation in which people do not reach a mutually beneficial outcome because they lack some way to jointly coordinate their actions.

¹Milton Friedman, *The Optimum Quantity of Money and Other Essays* (Chicago: Aldine, 1969), p. 97.

FIGURE IC1-2 THE REAL-BUSINESS-CYCLE THEORY

In the real-business-cycle theory, a decline in resource availability shifts the nation's long-run aggregate supply curve to the left from AS_{LR1} to AS_{LR2} . The decline in real output from Q_1 to Q_2 , in turn, reduces money demand (less is needed) and money supply (fewer loans are taken out) such that aggregate demand shifts leftward from AD_1 to AD_2 . The result is a recession in which the price level remains constant.



NON-ECONOMIC EXAMPLE

Consider first a non-economic example. Suppose you learn of an impending informal party at a nearby beach, though it looks as though it might rain. If you expect others to be there, you will decide to go. If you expect that others will not go, you will decide to stay home. There are several possible equilibrium outcomes, depending on the mix of people's expectations. Let's consider just two. If each person assumes that all the others will be at the party, all will go. The party will occur and presumably everyone will have a good time. But if each person assumes that everyone else will stay home, all will stay home and there will be no party. When the party does not take place, even though all would be better off if it did take place, a coordination failure has occurred.

MACROECONOMIC EXAMPLE

Now let's apply this example to macroeconomic instability, specifically recession. Suppose that individual firms and households expect other firms and consumers to cut back their investment and consumption spending. As a result, each firm and household will anticipate a reduction of aggregate demand. Firms therefore will cut back their own investment spending, since they will anticipate that their future production capacity will be excessive. Households will also reduce their own spending (increase their saving), because they anticipate that they will experience reduced work hours, possible layoffs, and falling income in the future.

Aggregate demand will indeed decline and the economy will indeed experience a recession in response to what amounts to a self-fulfilling prophecy. Moreover, the economy will stay below a full-employment level of output because, once there, producers and households have no individual incentive to increase spending. If all

producers and households would agree to increase their investment and consumption spending simultaneously, then aggregate demand would rise, and real output and real income would increase. Each producer and each consumer would be better off. However, this outcome does not occur because there is no mechanism for firms and households to agree on such a joint spending increase.

In this case, the economy is stuck in *an unemployment equilibrium* because of a coordination failure. With a different set of expectations, a coordination failure might leave the economy in *an inflation equilibrium*. In this view, there are a number of such potential equilibrium positions in the economy, some good and some bad, depending on people's mix of expectations. Macroeconomic instability, then, reflects the movement of the economy from one such equilibrium position to another as expectations change.

QUICK REVIEW

- Mainstream economists say that macroeconomic instability usually stems from swings in investment spending and, occasionally, from adverse aggregate supply shocks.
- Monetarists view the economy through the equation of exchange ($MV = PQ$). If velocity V is stable, changes in the money supply M lead directly to changes in nominal GDP ($P \times Q$). For monetarists, changes in M via inappropriate monetary policy are the single most important cause of macroeconomic instability.
- In the real-business-cycle theory, significant changes in “real” factors such as technology, resource availability, and productivity change the economy's long-run aggregate supply, causing macroeconomic instability.
- Macroeconomic instability can result from coordination failures—less-than-optimal equilibrium positions that occur because businesses and households lack a way to coordinate their actions.

DOES THE ECONOMY “SELF-CORRECT”?

Just as there are disputes over the causes of macroeconomic instability, there are disputes over whether or not the economy will correct itself when instability does occur. And economists also disagree on how long it will take for any such self-correction to take place.

RATIONAL EXPECTATIONS THEORY

The hypothesis that firms and households expect monetary and fiscal policies to have certain effects on the economy and (in pursuit of their own self-interests) take actions that make these policies ineffective.

New Classical View of Self-Correction

New classical economists tend to be either monetarists or adherents of **rational expectations theory**: *the idea that businesses, consumers, and workers expect changes in policies or circumstances to have certain effects on the economy and, in pursuing their own self-interest, take actions to make sure those changes affect them as little as possible.* The **new classical economics** holds that when the economy occasionally diverges from its full-employment output, internal mechanisms within the economy will automatically move it back to that output. Policy-makers should stand back and let the automatic correction occur, rather than engaging in active fiscal and monetary policy. This perspective is that associated with the vertical long-run Phillips curve, which we discussed in Chapter 15.

NEW CLASSICAL ECONOMICS

The theory that when the economy occasionally diverges from its full-employment output, internal mechanisms within the economy will automatically move it back to full employment.

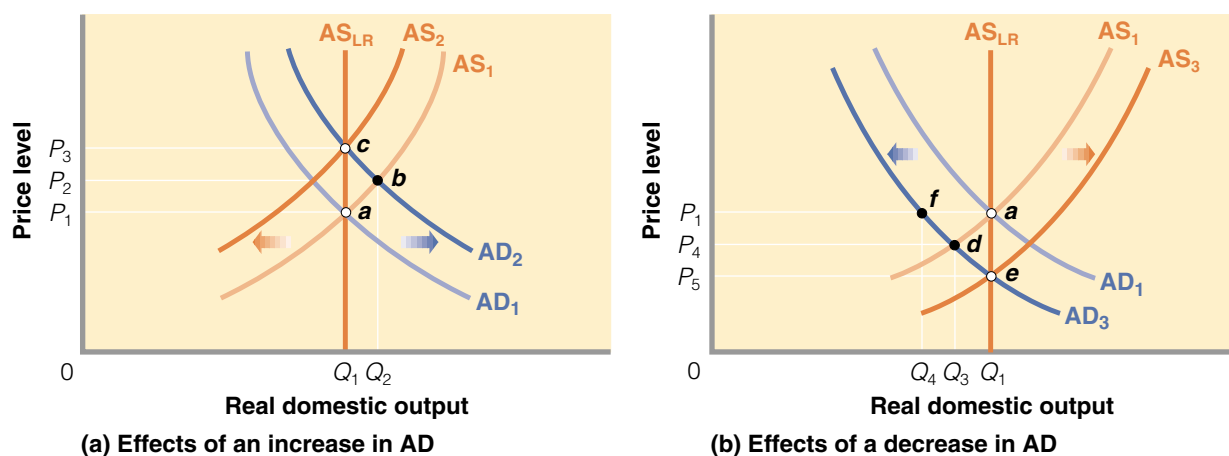
GRAPHICAL ANALYSIS

Figure IC1-3a relates the new classical analysis to the question of self-correction. Specifically, an increase in aggregate demand, say, from AD_1 to AD_2 , moves the economy upward along its short-run aggregate supply curve AS_1 from a to b . The price level rises and real output increases. In the long run, however, nominal wages rise to restore real wages. Per-unit production costs then increase, and the short-run aggregate supply curve shifts leftward, eventually from AS_1 to AS_2 . The economy moves from b to c and real output returns to its full-employment level, Q_1 . This level of output is dictated by the economy's vertical long-run aggregate supply curve, AS_{LR} .

Conversely, a decrease in aggregate demand from AD_1 to AD_3 in Figure IC1-3b first moves the economy downward along its short-run aggregate supply curve AS_1 from point a to d . The price level declines, as does the level of real output. But in the long run, nominal wages decline such that real wages fall to their previous levels. When that happens, per-unit production costs decline and the short-run aggregate supply curve shifts to the right, eventually from AS_1 to AS_3 . The economy moves back to e , where it again achieves its full-employment level, Q_1 . As in Figure IC1-3a, the economy in Figure IC1-3b has automatically self-corrected to its full-employment output and its natural rate of unemployment.

SPEED OF ADJUSTMENT

There is some disagreement among new classical economists on how long it will take for self-correction to occur. Monetarists usually hold the *adaptive* expectations view that people form their expectations on the basis of present realities and only gradually change their expectations as experience unfolds. This means that the

FIGURE IC1-3 NEW CLASSICAL VIEW OF SELF-CORRECTION

(a) An unanticipated increase in aggregate demand from AD_1 to AD_2 first moves the economy from a to b . The economy then self-corrects to c . An anticipated increase in aggregate demand moves the economy directly from a to c . (b) An unanticipated decrease in aggregate demand from AD_1 to AD_3 moves the economy from a to d . The economy then self-corrects to e . An anticipated decrease in aggregate demand moves the economy directly from a to e . (Mainstream economists, however, say that if the price level remains at P_1 , the economy will move from a to f , and even if the price level falls to P_2 , the economy may remain at d because of downward wage inflexibility.)

shifts in the short-run aggregate supply curves shown in Figure IC1-3 may not occur for two or three years, or even longer. Other new classical economists, however, accept the rational expectations assumption that workers anticipate some future outcomes before they occur. When price-level changes are fully anticipated, adjustments of nominal wages are very quick, or even instantaneous. Let's see why.

Although several new theories, including Keynesian ones, incorporate rational expectations, our interest here is the new classical version of the rational expectations theory (hereafter, RET). RET is based on two assumptions:

- People behave rationally, gathering and intelligently processing information to form expectations about things that are economically important to them. They adjust those expectations quickly as new developments affecting future economic outcomes occur. Where there is adequate information, people's beliefs about future economic outcomes accurately reflect the likelihood that those outcomes will occur. For example, if it is clear that a certain policy will cause inflation, people will recognize that fact and adjust their economic behaviour in anticipation of inflation.
- Like classical economists, RET economists assume that all product and resource markets are highly competitive and that prices and wages are flexible both upward and downward. But the RET economists go further, assuming that new information is quickly (in some cases instantaneously) taken into account in the demand and supply curves of such markets. The upshot is that equilibrium prices and quantities adjust rapidly to unforeseen events—say, technological change or aggregate supply shocks. They adjust instantaneously to events that have known outcomes—for example, changes in fiscal or monetary policy.

UNANTICIPATED PRICE-LEVEL CHANGES

The implication of RET is not only that the economy is self-correcting but that self-correction occurs quickly. In this thinking, unanticipated changes in the price level—so-called **price-level surprises**—do cause temporary changes in real output. Suppose, for example, that an unanticipated increase in foreign demand for Canadian goods increases Canadian aggregate demand from AD_1 to AD_2 in Figure IC1-3a. The immediate result is an unexpected increase in the price level from P_1 to P_2 .

But now an interesting question arises. If wages and prices are flexible, as assumed in RET, why doesn't the higher price level immediately cause nominal wages to rise, such that there is no increase in real output at all? Why does the economy temporarily move from point a to b along AS_1 ? In RET, firms increase output from Q_1 to Q_2 because of misperceptions about rising prices of their own products relative to the prices of other products (and to the prices of labour). They mistakenly think the higher prices of their own products have resulted from increased demand for those products relative to the demands for other products. Expecting higher profits, they increase their own production. But in fact *all* prices, including the price of labour (nominal wages), are rising because of the general increase in aggregate demand. Once firms see that *all* prices and wages are rising, they decrease their production to previous levels.

In terms of Figure IC1-3a, the increase in nominal wages shifts the short-run aggregate supply curve leftward, ultimately from AS_1 to AS_2 , and the economy moves from b to c . Thus, the increase in real output caused by the price-level surprise corrects itself.

The same analysis in reverse applies to an unanticipated price-level decrease. In the economy represented by Figure IC1-3b, firms misperceive that the prices for

PRICE-LEVEL SURPRISES

Unanticipated changes in the price level.

their own products are falling due to decreases in the demand for those products relative to other products. They anticipate declines in profit and cut production. As a result of their collective actions, real output in the economy falls. But seeing that all prices and wages are dropping, firms increase their output to prior levels. The short-run aggregate supply curve in Figure 1C1b shifts rightward from AS_1 to AS_3 and the economy “self-corrects” by moving from d to e .

FULLY ANTICIPATED PRICE-LEVEL CHANGES

In RET, fully *anticipated* price-level changes do not change real output, even for short periods. In Figure IC1-3a, again consider the increase in aggregate demand from AD_1 to AD_2 . Businesses immediately recognize that the higher prices being paid for their products are part of the inflation they had anticipated. They understand that the same forces that are causing the inflation result in higher nominal wages, leaving their profits unchanged. The economy therefore moves directly from a to c . The price level rises as expected, and output remains at its full-employment level Q_1 .

Similarly, a fully *anticipated* price-level decrease will leave real output unchanged. Firms conclude that nominal wages are declining by the same percentage amount as the declining price level, leaving profits unchanged. The economy represented by Figure IC1-3b therefore moves directly from a to e . Deflation occurs, but the economy continues to produce its full-employment output Q_1 . The anticipated decline in aggregate demand causes no change in real output.

Mainstream View of Self-Correction

Almost all economists acknowledge that the new classical economists have made significant contributions to the theory of aggregate supply. In fact, mainstream economists have incorporated some aspects of RET into their own more detailed models. However, most economists strongly disagree with RET on the question of downward price and wage flexibility. While the stock market, foreign exchange market, and certain commodity markets experience day-to-day or minute-to-minute price changes, including price declines, that is not true of many product markets and most labour markets. There is ample evidence, say mainstream economists, that many prices and wages are inflexible downward for long periods. As a result, it may take years for the economy to move from recession back to full-employment output, unless it gets help from fiscal and monetary policy.

GRAPHICAL ANALYSIS

To understand this mainstream view, again examine Figure IC1-3b. Suppose aggregate demand declines from AD_1 to AD_3 because of a significant decline in investment spending. If the price level remains at P_1 , the economy will not move from a to d to e , as suggested by RET. Instead, the economy will move from a to f , as if it were moving along a horizontal aggregate supply curve between those two points. Real output will decline from its full-employment level, Q_1 , to the recessionary level, Q_4 .

But let's assume that surpluses in product markets eventually cause the price level to fall to P_4 . Will this lead to the decline in nominal wages needed to shift aggregate supply from AS_1 to AS_2 , as suggested by the new classical economists? “Highly unlikely,” say mainstream economists. Even more so than prices, nominal wages tend to be inflexible downward. If nominal wages do not decline in response to the decline in the price level, then the short-run aggregate supply curve will not shift rightward. The self-correction mechanism assumed by RET and new classical

economists will break down. Instead, the economy will remain at d , experiencing less-than-full-employment output and a high rate of unemployment.

DOWNWARD WAGE INFLEXIBILITY

In Chapter 9 we discussed several reasons why firms may not be able to, or may not want to, lower nominal wages. Firms may not be able to cut wages because of wage contracts and the legal minimum wage. And firms may not want to lower wages if they fear potential problems with morale, effort, and efficiency.

While contracts are thought to be the main cause of wage rigidity, so-called efficiency wages and insider-outsider relationships may also play a role. Let's explore both.

EFFICIENCY WAGE THEORY

Recall from Chapter 9 that an efficiency wage is a wage that minimizes the firm's labour cost per unit of output. Normally, we would think that the market wage is the efficiency wage since it is the lowest wage at which a firm can obtain a particular type of labour. But where the cost of supervising workers is high, or where worker turnover is great, firms may discover that paying a wage that is higher than the market wage will lower their wage cost per unit of output.

Example: Suppose a firm's workers, on average, produce 8 units of output at a \$9 market wage but 10 units of output at a \$10 above-market wage. The efficiency wage is \$10, not the \$9 market wage. At the \$10 wage, the labour cost per unit of output is only \$1 (= \$10 wage/10 units of output), compared with \$1.12 (= \$9 wage/8 units of output) at the \$9 wage.

How can a higher wage result in greater efficiency?

- **Greater work effort** The above-market wage, in effect, raises the cost to workers of losing their jobs as a result of poor performance. Because workers have a strong incentive to retain their relatively high-paying jobs, they are more likely to provide greater work effort. Looked at differently, workers are more reluctant to shirk (neglect or avoid work) because the higher wage makes job loss more costly to them. Consequently, the above-market wage can be the efficient wage; it can enhance worker productivity so much that the higher wage more than pays for itself.
- **Lower supervision costs** With less incentive among workers to shirk, the firm needs fewer supervisory personnel to monitor work performance. This, too, can lower the firm's overall wage cost per unit of output.
- **Reduced job turnover** The above-market pay discourages workers from voluntarily leaving their jobs. The lower turnover rate reduces the firm's cost of hiring and training workers. It also gives the firm a more experienced, more productive workforce.

The key implication for macroeconomic instability is that efficiency wages add to the downward inflexibility of wages. Firms that pay efficiency wages will be reluctant to cut wages when aggregate demand declines, since such cuts may encourage shirking, require more supervisory personnel, and increase turnover. In other words, wage cuts that reduce productivity and raise per-unit labour costs are self-defeating.

INSIDER-OUTSIDER RELATIONSHIPS

Other economists theorize that downward wage inflexibility may relate to relationships between "insiders" and "outsiders." Insiders are workers who retain employ-

ment even during recession. Outsiders are workers who have been laid off from a firm and unemployed workers who would like to work at that firm.

When recession produces layoffs and widespread unemployment, we might expect outsiders to offer to work for less than the current wage rate, in effect bidding down wage rates. We might also expect firms to hire such workers in order to reduce their costs. But, according to the **insider-outsider theory**, outsiders may not be able to underbid existing wages because employers may view the non-wage cost of hiring them to be prohibitive. Employers might fear that insiders would view acceptance of such underbidding as undermining years of effort to increase wages or, worse, as “stealing” jobs. So they may refuse to cooperate with new workers who have undercut their pay. Where teamwork is critical for production, such lack of cooperation will reduce overall productivity and thereby lower the firms’ profits.

Even if firms are willing to employ outsiders at less than the current wage, those workers might refuse to work for less than the existing wage. To do so might invite harassment from the insiders whose pay they have undercut. Thus, outsiders may remain unemployed, relying on past saving, unemployment compensation, and other social programs to make ends meet.

As in the efficiency wage theory, the insider-outsider theory implies that wages will be inflexible downward when aggregate demand declines. Self-correction may eventually occur, but not nearly as rapidly as the new classical economists contend. (*Key Question 7*)

INSIDER-OUTSIDER THEORY The hypothesis that nominal wages are inflexible downward because firms are aware that workers (“insiders”) who retain employment during recession may refuse to work cooperatively with previously unemployed workers (“outsiders”) who offer to work for less than the current wage.

QUICK REVIEW

- New classical economists believe that the economy “self-corrects” when unanticipated events divert it from its full-employment level of real output.
- In RET, unanticipated price-level changes cause changes in real output in the short run but not in the long run.
- According to RET, market participants immediately change their actions in response to anticipated price-level changes such that no change in real output occurs.
- Mainstream economists say that the economy can get mired in recession for long periods because of downward price and wage inflexibility.
- Sources of downward wage inflexibility include contracts, efficiency wages, and insider-outsider relationships.

RULES OR DISCRETION?

These different views on the causes of instability and on the rate speed of self-correction have led to vigorous debate on macro policy. Should the government adhere to policy rules that prohibit it from causing instability in an economy that is otherwise stable? Or should it use discretionary fiscal and monetary policy, when needed, to stabilize a sometimes-unstable economy?

In Support of Policy Rules

Monetarists and other new classical economists believe policy rules would reduce instability in the economy. They believe that such rules would prevent government from trying to “manage” aggregate demand. That would be a desirable trend, because in their view such management is misguided and thus, is likely to *cause* more instability than it cures.

MONETARY RULE The rule suggested by monetarism; the money supply should be expanded each year at the same annual rate as the potential rate of growth of the real GDP.

MONETARY RULE

Since inappropriate monetary policy is the major source of macroeconomic instability, say monetarists, the enactment of a **monetary rule** would make sense. An example of such a rule would be a requirement that the central bank expand the money supply each year at the same annual rate as the typical growth of the economy's production capacity. That expansion of the money supply would occur year-after-year regardless of the state of the economy. The central bank's sole monetary role would then be to use its tools (open-market operations, discount-rate changes, and changes in desired reserve ratios) to ensure that the nation's money supply grew steadily by, say, 3 to 5 percent a year. According to Milton Friedman,

Such a rule . . . would eliminate . . . the major cause of instability in the economy—the capricious and unpredictable impact of countercyclical monetary policy. As long as the money supply grows at a constant rate each year, be it 3, 4, or 5 percent, any decline into recession will be temporary. The liquidity provided by a constantly growing money supply will cause aggregate demand to expand. Similarly, if the supply of money does not rise at a more than average rate, any inflationary increase in spending will burn itself out for lack of fuel.²

Figure IC1-4 illustrates the rationale for a monetary rule. Suppose the economy represented there is operating at its full-employment real output, Q_1 . Also suppose the nation's long-run aggregate supply curve shifts rightward, as from AS_{LR1} to AS_{LR2} , each year, signifying the average annual potential increase in real output. As you saw in earlier chapters, such annual increases in “potential GDP” result from added resources, improved resources, and improved technology.

Monetarists argue that a monetary rule would tie increases in the money supply to the typical rightward shift of long-run aggregate supply. In view of the direct link between changes in the money supply and aggregate demand, this would ensure that the AD curve would shift rightward, as from AD_1 to AD_2 , each year. As a result, real GDP would rise from Q_1 to Q_2 and the price level would remain constant at P_1 . A monetary rule, then, would promote steady growth of real output along with price stability.

Generally, RET economists also support a monetary rule. They conclude that an easy or tight money policy would alter the rate of inflation but not real output. Suppose, for example, the central bank were to implement an easy money policy to reduce interest rates, expand investment spending, and boost real GDP. On the basis of past experience and economic knowledge, the public would anticipate that this policy was inflationary and would take protective actions. Workers would press for higher nominal wages, firms would raise their product prices, and lenders would lift their nominal interest rates on loans.

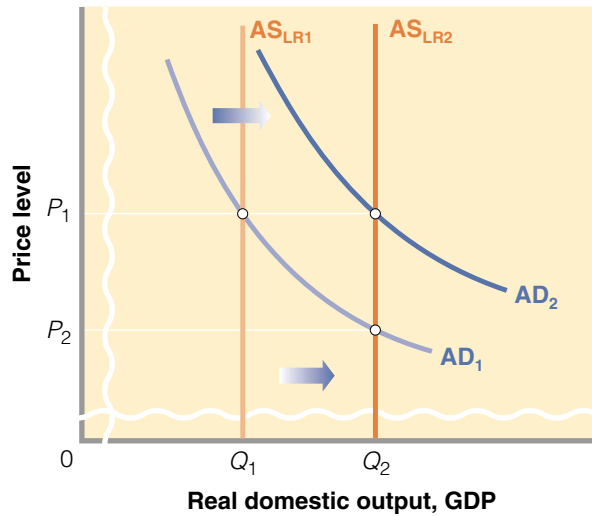
All these responses are designed to prevent inflation from having adverse effects on the real income of workers, businesses, and lenders. But collectively they would immediately raise wage and price levels. So the increase in aggregate demand brought about by the easy money policy would be completely dissipated in higher prices and wages. Real output and employment would not expand.

In this view, the combination of rational expectations and instantaneous market adjustments dooms discretionary monetary policy to ineffectiveness. If discretionary monetary policy produces only inflation (or deflation), say the RET economists, then it makes sense to limit the central bank's discretion and to require government to enact a monetary rule consistent with achieving zero or low inflation at all times.

²As quoted in Lawrence S. Ritter and William L. Silber, *Money*, 5th ed. (New York: Basic Books, 1984), pp. 141–142.

FIGURE IC1-4 RATIONALE FOR A MONETARY RULE

A monetary rule that required the central bank to increase the money at an annual rate linked to the long-run increase in potential GDP would shift aggregate demand rightward, as from AD_1 to AD_2 , at the same pace as the shift in long-run aggregate supply, here AS_{LR1} to AS_{LR2} . Thus the economy would experience growth without inflation or deflation.



BALANCED BUDGET

Monetarists and new classical economists question the effectiveness of fiscal policy. At the extreme, a few of them favour a constitutional amendment requiring the federal government to balance its budget annually. Others simply suggest that government be “passive” in its fiscal policy, not intentionally creating budget deficits or surpluses. They believe that deficits and surpluses caused by recession or inflationary expansion will eventually correct themselves as the economy self-corrects to its full-employment output.

Monetarists are particularly strong in their opposition to expansionary fiscal policy. They believe that the deficit spending accompanying such a policy has a strong tendency to crowd out private investment. Suppose government runs a budget deficit by printing and selling Canadian government securities—that is, by borrowing from the public. By engaging in such borrowing, the government is competing with private businesses for funds. The borrowing increases the demand for money, which then raises the interest rate and crowds out a substantial amount of private investment that would otherwise have been profitable. The net effect of a budget deficit on aggregate demand therefore is unpredictable and, at best, modest.

RET economists reject discretionary fiscal policy for the same reason they reject active monetary policy: they don’t think it works. Business and labour will immediately adjust their behaviour in anticipation of the price-level effects of a change in fiscal policy. The economy will move directly to the anticipated new price level. Like monetary policy, say the RET theorists, fiscal policy can move the economy along its vertical long-run aggregate supply curve. But because its effects on inflation are fully anticipated, fiscal policy cannot alter real GDP even in the short run. The best course of action for government is to balance its budget.

In Defence of Discretionary Stabilization Policy

Mainstream economists oppose both a monetary rule and a balanced-budget requirement. They believe that monetary policy and fiscal policy are important tools for achieving and maintaining full employment, price stability, and economic growth.

DISCRETIONARY MONETARY POLICY

In supporting discretionary monetary policy, mainstream economists argue that the rationale for a monetary rule is flawed. While there is indeed a close relationship between the money supply and nominal GDP over long periods, in shorter periods this relationship breaks down. The reason is that the velocity of money has proved to be more variable and unpredictable than monetarists contend. Arguing that velocity is variable both cyclically and over time, mainstream economists contend that a constant annual rate of increase in the money supply might not eliminate fluctuations in aggregate demand. In terms of the equation of exchange, a steady rise of M does not guarantee a steady expansion of aggregate demand because V —the rate at which money is spent—can change.

Look again at Figure IC1-4, in which we demonstrated the monetary rule: expand the money supply annually by a fixed percentage, regardless of the state of the economy. During the period in question, optimistic business expectations might create a boom in investment spending and thus shift the aggregate demand curve to some location to the right of AD_2 . (You may want to pencil in a new AD curve, labelling it AD_3 .) The price level would then rise above P_1 ; that is, demand-pull inflation would occur. In this case, the monetary rule will not accomplish its goal of maintaining price stability. Mainstream economists say that the central bank can use a tight money policy to reduce the excessive investment spending and thereby hold the rightward shift of aggregate demand to AD_2 , thus avoiding inflation.

Similarly, suppose instead that investment were to decline because of pessimistic business expectations. Aggregate demand will then increase by some amount less than the increase from AD_1 to AD_2 in Figure IC1-4. Again, the monetary rule fails the stability test: the price level sinks below P_1 (deflation occurs). Or if the price level is inflexible downward at P_1 , the economy will not achieve its full-employment output (unemployment rises). An easy money policy can help avoid each outcome.

Mainstream economists quip that the trouble with the monetary rule is that it tells the policy-maker: “Don’t do something, just stand there.”

DISCRETIONARY FISCAL POLICY

Mainstream economists support the use of fiscal policy to keep recessions from deepening or to keep mild inflation from becoming severe inflation. They recognize the possibility of crowding out but do not think it is a serious problem when business borrowing is depressed, as is usually the case in recession. Because politicians can abuse fiscal policy, most economists feel that it should be held in reserve for situations where monetary policy appears to be ineffective or working too slowly.

As indicated earlier, mainstream economists oppose requirements to balance the budget annually. Tax revenues fall sharply during recessions and rise briskly during periods of demand-pull inflation. Therefore, a law or a constitutional amendment mandating an annually balanced budget would require the government to increase tax rates and reduce government spending during recession and to reduce tax rates and increase government spending during economic booms. The first set of actions would worsen recession, and the second set would fuel inflation.

Increased Macro Stability

Finally, mainstream economists point out that the Canadian economy has been about one-third more stable since 1946 than it had been in earlier periods. It is not a coincidence, they say, that use of discretionary fiscal and monetary policy characterized the latter period but not the former. These policies have helped tame the

business cycle. Moreover, mainstream economists point out several specific policy successes in the past two decades:

- A tight money policy dropped inflation from 12.4 percent in 1980 to 4.4 percent in 1983.
- An expansionary fiscal policy reduced the unemployment rate from 11 percent in 1992 to 7.5 percent in 1999.
- An easy money policy helped the economy recover from the 1990–1991 recession.
- Judicious tightening of monetary policy in the mid-1990s helped the economy remain on a non-inflationary path. (*Key Question 13*)

SUMMARY OF ALTERNATIVE VIEWS

In Table IC1-1 we summarize the central ideas and policy implications of three macroeconomic theories: mainstream macroeconomics, monetarism, and rational expectations theory. Note that we have broadly defined new classical economics to

TABLE IC1-1 ALTERNATIVE MACROECONOMIC THEORIES AND POLICIES

Issue	Mainstream macroeconomics (Keynesian based)	New classical economics	
		Monetarism	Rational expectations
View of the private economy	Potentially unstable	Stable in long run at natural rate of unemployment	Stable in long run at natural rate of unemployment
Cause of the observed instability of the private economy	Investment plans unequal to saving plans (changes in AD); AS shocks	Inappropriate monetary policy	Unanticipated AD and AS shocks in the short run
Appropriate macro policies	Active fiscal and monetary policy	Monetary rule	Monetary rule
How changes in the money supply affect the economy	By changing the interest rate, which changes investment and real GDP	By directly changing AD, which changes GDP	No effect on output because price-level changes are anticipated
View of the velocity of money	Unstable	Stable	No consensus
How fiscal policy affects the economy	Changes AD and GDP via the multiplier process	No effect unless money supply changes	No effect on output because price-level changes are anticipated
View of cost-push inflation	Possible AS shock	Impossible in the long run in the absence of excessive money supply growth	Impossible in the long run in the absence of excessive money supply growth

include both monetarism and the rational expectations theory, since both adhere to the view that the economy tends automatically to achieve equilibrium at its full-employment output. Also note that “mainstream macroeconomics” remains based on Keynesian ideas.

These different perspectives have obliged mainstream economists to rethink some of their fundamental principles and to revise many of their positions. Although considerable disagreement remains, mainstream macroeconomists agree with monetarists that “money matters” and that excessive growth of the money supply is the major cause of long-lasting, rapid inflation. They also agree with RET proponents and theorists of coordination failures that expectations matter. If government can create expectations of price stability, full employment, and economic growth, households and firms will tend to act in ways to make them happen. In short, thanks to ongoing challenges to conventional wisdom, macroeconomics continues to evolve.

The **LAST** word

THE TAYLOR RULE: COULD A ROBOT REPLACE THE BANK OF CANADA

Macroeconomist John Taylor of Stanford University calls for a new monetary rule that would institutionalize appropriate central bank policy responses to changes in real output and inflation.

In our discussion of “rules versus discretion,” “rules” were associated with a *passive* monetary policy—one in which the monetary rule required a central bank to expand the money supply at a fixed annual rate regardless of the state of the economy. “Discretion,” on the other hand, was associated with an *active* monetary policy in which the central bank changed interest rates in response to actual or anticipated changes in the economy.

Economist John Taylor has put a new twist on the “rules versus discretion” debate by suggesting a hybrid policy rule that dictates the precise active monetary actions a central bank should take when changes in the economy occur. This so-called *Taylor rule* combines traditional monetarism, with its emphasis on a monetary rule, and the more mainstream view that active monetary policy

is a useful tool for taming inflation and limiting recession. Unlike the Friedman monetary rule, the Taylor rule holds, for example, that monetary policy should respond to changes in both real GDP and inflation, not simply inflation. The key adjustment instrument is the interest rate, not the money supply.

The Taylor rule has three parts:

- If real GDP rises 1 percent above potential GDP, the Bank of Canada should raise the interest rate of overnight loans, relative to the current inflation rate, by 0.5 percent.
- If inflation rises by 1 percent above its target of 2 percent, then the Bank of Canada should raise the overnight rate by 0.5 percent relative to the inflation rate.
- When real GDP is equal to potential GDP and inflation is

equal to its target rate of 2 percent, the overnight rate should remain at about 4 percent, which would imply a real interest rate of 2 percent.³

Taylor has neither suggested nor implied that a robot, programmed with the Taylor rule, should replace the Bank of Canada. The Bank of Canada’s discretion to override the rule (or “contingency plan for policy”) would be retained, but the central bank would have to explain why its policies diverged from the rule. So, the rule would remove the “mystery” associated with monetary policy and increase the Bank of Canada’s accountability. Also, says Taylor, if used consistently the rule would enable market participants to predict central bank behaviour, which would increase the Bank of Canada’s credibility and reduce uncertainty.

Critics of the Taylor rule admit it is more in tune with counter-cyclical central bank policy than Friedman's simple monetary rule. But they see no reason to limit the Bank of Canada's discretion in adjusting interest rates as it sees fit to achieve stabilization

and growth. Monetary policy may be more art than science. The critics also point out that the Bank of Canada has done a remarkable job of promoting price stability, full employment, and economic growth over the past decade. In view of this success,

they ask, "Why saddle the Bank of Canada with a highly mechanical monetary rule?"

³John Taylor, *Inflation, Unemployment, and Monetary Policy* (Cambridge, MA, MIT Press, 1998, pp. 44–47.

CHAPTER SUMMARY

1. In classical economics the aggregate supply curve is vertical and establishes the level of real output, while the aggregate demand curve is generally stable and establishes the price level. In this view the economy is highly stable.
2. In Keynesian economics the aggregate supply curve is horizontal at less-than-full-employment levels of real output, while the aggregate demand curve is inherently unstable. In this view the economy is highly unstable.
3. The mainstream view is that macro instability is caused by the volatility of investment spending, which shifts the aggregate demand curve. If aggregate demand increases too rapidly, demand-pull inflation may occur; if aggregate demand decreases, recession may occur. Occasionally, adverse supply shocks also cause instability.
4. Monetarism focuses on the equation of exchange: $MV = PQ$. Because velocity is thought to be stable, changes in M create changes in nominal GDP ($= PQ$). Monetarists believe that the most significant cause of macroeconomic instability has been inappropriate monetary policy. Rapid increases in M cause inflation; insufficient growth of M causes recession. In this view, a major cause of the Great Depression was inappropriate monetary policy, which allowed the money supply to decline.
5. Real-business-cycle theory views changes in resource availability and technology (real factors), which alter productivity, as the main causes of macroeconomic instability. In this theory, shifts in the economy's long-run aggregate supply curve change real output. In turn, money demand and money supply change, shifting the aggregate demand curve in the same direction as the initial change in long-run aggregate supply. Real output thus can change without a change in the price level.
6. A coordination failure is said to occur when people lack a way to coordinate their actions in order to achieve a mutually beneficial equilibrium. Depending on people's expectations, the economy can come to rest at either a good equilibrium (non-inflationary full-employment output) or at a bad equilibrium (less-than-full-employment output or demand-pull inflation). A bad equilibrium is a result of a coordination failure.
7. The rational expectations theory (RET) rests on two assumptions: (1) With sufficient information, people's beliefs about future economic outcomes accurately reflect the likelihood that those outcomes will occur; and (2) markets are highly competitive, and prices and wages are flexible both upward and downward.
8. New classical economists (monetarists and rational expectations theorists) see the economy as automatically correcting itself when disturbed from its full-employment level of real output. In RET, unanticipated changes in aggregate demand change the price level, which in the short run leads firms to change output. But once the firms realize

that all prices are changing (including nominal wages) as part of general inflation or deflation, they restore their output to the previous level. Anticipated changes in aggregate demand produce only changes in the price level, not changes in real output.

9. Mainstream economists reject the new classical view that all prices and wages are flexible downward. They contend that nominal wages, in particular, are inflexible downward because of several factors, including labour contracts, efficiency wages, and insider-outsider relationships. This means that declines in aggregate demand lower real output, not only wages and prices.
10. Monetarist and RET economists recommend a monetary rule according to which the central bank is directed to increase the money supply at a fixed annual rate equal to the long-run growth of potential GDP. They also support maintaining a “neutral” fiscal policy, as opposed to using discretionary fiscal policy to create budget deficits or budget surpluses. A few monetarists and RET economists favour a constitutional amendment that would require the federal government to balance its budget annually.
11. Mainstream economists oppose a monetary rule and a balanced-budget requirement and vigorously defend discretionary monetary and fiscal policies. They say that both theory and evidence suggest that such policies are helpful in achieving full employment, price stability, and economic growth.

TERMS AND CONCEPTS

classical view, p. 2	monetarism, p. 6	rational expectations theory, p. 10
coordination failure, p. 9	monetary rule, p. 16	real-business-cycle theory, p. 8
equation of exchange, p. 6	new classical economics, p. 11	velocity, p. 6
insider-outsider theory, p. 15	price-level surprises, p. 12	
Keynesian view, p. 4		

STUDY QUESTIONS

1. **KEY QUESTION** Use the aggregate demand-aggregate supply model to compare the “old” classical and the Keynesian interpretations of (a) the aggregate supply curve and (b) the stability of the aggregate demand curve. Which of these interpretations seems more consistent with the realities of the Great Depression?
2. According to mainstream economists, what is the usual cause of macroeconomic instability? What role does the spending-income multiplier play in creating instability? How might adverse aggregate supply factors cause instability, according to mainstream economists?
3. State and explain the basic equation of monetarism. What is the major cause of macroeconomic instability, as viewed by monetarists?
4. **KEY QUESTION** Suppose that the money supply and the nominal GDP for a hypothetical economy are \$96 billion and \$336 billion, respectively. What is the velocity of money? How will households and businesses react if the central bank reduces the money supply by \$20 billion? By how much will nominal GDP have to fall to restore equilibrium, according to the monetarist perspective?
5. Briefly describe the difference between a so-called real business cycle and a more traditional “spending” business cycle.
6. Craig and Kris were walking directly toward each other in a congested store aisle. Craig moved to his left to avoid Kris, and at the same time Kris moved to his right to avoid Craig. They bumped into each other. What concept does this example illustrate? How does this idea relate to macroeconomic instability?
7. **KEY QUESTION** Use an AD-AS graph to demonstrate and explain the price-level and real-output outcome of an anticipated decline in aggregate demand, as viewed by RET economists. (Assume that the economy initially is operating at its full-employment level of output.) Then demonstrate and explain on the same graph the outcome as viewed by mainstream economists.
8. What is an efficiency wage? How might payment of an above-market wage reduce

shirking by employees and reduce worker turnover? How might efficiency wages contribute to downward wage inflexibility, at least for a time, when aggregate demand declines?

9. How might relationships between so-called insiders and outsiders contribute to downward wage inflexibility?
10. Use the equation of exchange to explain the rationale for a monetary rule. Why will such a rule run into trouble if V unexpectedly falls because of, say, a drop in investment spending by businesses?
11. Answer parts (a) and (b) below on the basis of the following information for a hypothetical economy in year 1: money supply = \$400 billion; long-term annual growth of potential GDP = 3 percent; velocity = 4. Assume that the banking system initially has no excess reserves and that the desired reserve ratio is 10 percent. Also assume that velocity is constant and that the economy initially is operating at its full-employment real output.
 - a. What is the level of nominal GDP in year 1?
 - b. Suppose the Bank of Canada adheres to a monetary rule through open-market operations. What amount of Canadian securities will it have to sell to, or buy from, banks or the public between years 1 and 2 to meet its monetary rule?
12. Explain the difference between “active” discretionary fiscal policy advocated by mainstream economists and “passive” fiscal policy advocated by new classical economists. Explain: “The problem with a balanced-budget amendment is that it would, in a sense, require active fiscal pol-

icy—but in the wrong direction—as the economy slides into recession.”

13. **KEY QUESTION** Place MON, RET, or MAIN beside the statements that most closely reflect monetarist, rational expectations, or mainstream views, respectively.
 - a. Anticipated changes in aggregate demand affect only the price level; they have no effect on real output.
 - b. Downward wage inflexibility means that declines in aggregate demand can cause long-lasting recession.
 - c. Changes in the money supply M increase PQ ; at first only Q rises because nominal wages are fixed, but once workers adapt their expectations to new realities, P rises and Q returns to its former level.
 - d. Fiscal and monetary policy smooth out the business cycle.
 - e. The central bank should increase the money supply at a fixed annual rate.
14. You have just been elected Prime Minister of Canada, and the present Governor of the Bank of Canada has resigned. You need to appoint a new person to this position, as well as a person for minister of finance. Using Table IC1-1 and your knowledge of macroeconomics, identify the views on macro theory and policy you would want your appointees to hold. Remember, the economic health of the entire nation—and your chances for re-election—may depend on your selections.
15. **(Last Word)** Compare and contrast the Taylor Rule for monetary policy with the older simpler monetary rule advocated by Milton Friedman.

INTERNET APPLICATION QUESTIONS



1. **The Equation of Exchange—What Is the Current Velocity of Money?** The fundamental equation of monetarism is the equation of exchange: $MV = PQ = \text{GDP}$. The velocity of money, V , can be found by dividing GDP by M , the money supply. Calculate the velocity of money for the past few years. Which GDP data should be used: real or nominal GDP? Why? How stable is V during this time? Is V increasing or decreasing? Get GDP data from Statistics Canada www.statcan.ca/english/Pqdb/Economy/Economic/econ04.htm. Money

supply data can be found at Statistics Canada www.statcan.ca/english/Pqdb/Economy/Economic/econ07.htm.

2. **Comparative Stability of Real GDP—How Does Canada Fare?** Visit the OECD site at www.oecd.org/std/nahome.htm and select On-line Statistics. Then examine “Quarterly Growth Rates in GDP at Constant Prices.” Which three OECD countries have had the greatest stability of real GDP in the past five years? Which three the least?